

【CLAIMS】

【Claim 1】 A multifunctional electric-powered infant car with cradle function comprising: a car body having a plurality of rolling wheels attached thereto, the car body being configured such that the car body can be moved by driving wheels operated in an electric-powered fashion; and a cradle unit mounted on the car body such that the cradle unit can be moved back and forth, the cradle unit having a supporting frame vertically mounted to the car body and an inclination-adjustable back part for allowing an infant to be laid on the cradle unit, wherein the car body comprises:

a car body driving unit mounted to the bottom part of the car body base for transmitting a one-way rotating force generated from a driving motor to the driving wheels via a driving force transmitting part; and

a cradle driving unit configured to receive the driving force generated from the driving motor of the car body driving unit for moving the cradle unit back and forth.

【Claim 2】 The infant car as set forth in claim 1, wherein the driving force transmitting part comprises:

a first one-way bearing fitted on a shaft of the driving motor;

a driving gear disposed on the outer circumferential surface of the first one-way bearing;

a driving force transmitting gear engaged with the driving gear for transmitting a driving force;

a driven gear configured to be rotated while being engaged with the driving force transmitting gear;

a wheel driving shaft fitted in a center hole of the driven gear such that the wheel driving shaft is rotatably supported by a plurality of bearings;

a horizontal bevel gear attached to the lower end of the wheel driving shaft;

a vertical bevel gear engaged with the horizontal bevel gear;

a wheel shaft horizontally inserted in an inner hole defined in the vertical bevel gear such that the driving wheels are attached to both ends of the wheel shaft,

respectively; and

5 a driving wheel case rotatably fitted on the wheel driving shaft such that the driving wheels are surrounded by the driving wheel case, the driving wheel case being configured such that both ends of the wheel shaft are rotatably attached to the inner lower part of the driving wheel case.

【Claim 3】 The infant car as set forth in claim 2, further comprising:

10 a torque spring for independently rotating the driving wheels when load is applied to the driving wheels, the torque spring having one end securely connected to the vertical bevel gear and the other end securely connected to one of the driving wheels, which is rotatably attached to the wheel shaft.

【Claim 4】 The infant car as set forth in claim 2, further comprising:

a steering wheel unit detachably attached to the car body in front of the cradle unit; and
15 a steering unit for controlling the direction in which the driving wheels roll through the manipulation of the steering wheel unit.

【Claim 5】 The infant car as set forth in claim 4, wherein the steering unit comprises:

a steering gear disposed at the upper position of the outer circumferential surface of the driving wheel case;
20 a steering force transmitting gear engaged with the steering gear; and
a lower steering shaft attached to the car body such that the lower steering shaft can be rotated through a bearing, the lower steering shaft having the lower end fixedly inserted in the steering force transmitting gear,
an upper steering shaft being detachably attached to the lower steering
25 shaft.

【Claim 6】 The infant car as set forth in claim 1, wherein the driving force transmitting part comprises:

a first one-way bearing fitted on a shaft of the driving motor;

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a driving gear disposed on the outer circumferential surface of the first one-way bearing;

a driving force transmitting gear engaged with the driving gear for transmitting a driving force;

5 a driven gear configured to be rotated while being engaged with the driving force transmitting gear;

a wheel driving shaft fitted in a center hole of the driven gear such that the wheel driving shaft is rotatably supported by a plurality of bearings;

a horizontal bevel gear attached to the lower end of the wheel driving shaft;

10 a vertical bevel gear part attached to one of the driving wheels, which is engaged with the horizontal bevel gear; and

a driving wheel case rotatably fitted on the wheel driving shaft such that the driving wheels are surrounded by the driving wheel case, the driving wheel case being configured such that both ends of the wheel shaft are rotatably attached to the
15 inner lower part of the driving wheel case.

【Claim 7】 The infant car as set forth in claim 1, wherein the cradle driving unit comprises:

a second one-way bearing fitted on the shaft of the driving motor;

20 a driving pulley fitted on the outer circumferential surface of the second one-way bearing;

a driving belt having one side connected to the driving pulley for transmitting a driving force;

a driving force transmitting pulley connected to the other side of the driving belt;

25 a swing shaft rotatably attached to the car body such that the swing shaft can be rotated by the driving force transmitting pulley; and

a swing force transmitting member for moving the cradle unit back and forth by means of the driving force transmitted to the swing shaft.

【Claim 8】 The infant car as set forth in claim 7, wherein the swing force
30 transmitting member comprises:

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a rotary plate attached to the upper end of the swing shaft;
swing levers vertically disposed in front of and at the rear of the supporting
frame of the cradle unit, respectively;

a rubber belt connected between the swing levers; and

5 a connection piece for securely connecting the approximate middle part of
the rubber belt and one side of the rotary plate.

【Claim 9】 The infant car as set forth in any one of claims 1 to 8, further
comprising:

10 a driving input unit having selection switches for selecting the operation of
the cradle unit and the operation of the car body, respectively, and selection switches
for selecting the manual operation and the remote control operation, respectively;

a control unit for controlling the respective components, including the
driving motor, based on the selection through the driving input unit;

15 a remote controller receiving unit for receiving control signals transmitted
from a transmitting part of a remote controller having a plurality of input buttons and
transmitting the control signals to the control unit;

a power supply unit for supplying electric current to the respective
components under the control of the control unit;

20 a motor driving unit for driving the driving motor in the forward or reverse
direction based on the control signals of the control unit;

an overload detection unit for detecting overload of the driving motor and
transmitting the detected overload to the control unit; and

a sound controller for controlling sound of a sound device, including a
speaker, under the control of the control unit.

25 **【Claim 10】** The infant car as set forth in claim 9, further comprising:

a steering sub motor having a shaft, on which a sub motor gear is fitted such
that the driving wheels are operated;

a steering wheel position detecting part mounted adjacent to the sub motor
gear for detecting the position of a steering wheel; and

30 a steering sub motor driving part configured to receive the detected signal
from the steering wheel position detecting part for driving the steering sub motor

under the control of the control unit.

【Claim 11】 The infant car as set forth in claim 10, further comprising:

a plurality of ultrasonic sensor parts disposed at the front and rear ends of the car body for detecting obstructions such that the operation of the steering sub
5 motor is controlled by the control unit based on signals detected by the ultrasonic sensor parts.

【Claim 12】 The infant car as set forth in claim 9, further comprising:

a protection cover hingedly connected to the car body for selectively covering the driving input unit and the power supply unit.